Short description of project funded by CORE Organic II partners in the first call of CORE Organic II

Project short name and title

INTERVEG
Enhancing multifunctional benefits of cover crops – vegetables intercropping

Project summary

The project aims at verifying if the introduction and proper management of living mulch in vegetable production systems allows comparable yields and produce quality in comparison to the sole cropping systems, reducing the use of auxiliary, off-farm, inputs (i.e. plant protections products and fertilizers) and non-renewable energy consumption (i.e. fossil fuel for mechanical weeding). The cover crops – vegetables intercropped farming systems should then perform better in terms of environmental impact and profitability due to production costs reduction.
This hypothesis is tested in a range of European areas where open field organic vegetable production are a relevant activity. Field experiments will be carried out in four CORE Countries (IT, DK, DE and SLO), in sites having different soil characteristics and climatic conditions.
Two yielding crops have been identified, one common for all and one for each of the study areas, according to the following criteria: (i) economic relevance, (ii) season of the cropping cycle and (iii) representativeness as "model" crop of a larger crops group with similar characteristic and to which, the project outcomes can be extended. A range of cover crop families and species are intercropped with the yielding species in function of the typology of "service" they provide and in relation to the agro-ecosystems characteristics in which they are introduced.
Cover crops sowing period, root pruning as well as spacing or yielding crop and cover crop density are the relevant experimental factors that will be investigated in order to optimize the performance of the living mulched agro-ecosystems in comparison to the sole crop systems. The living mulched and the sole crop systems will be compared in terms of yield quality and stability, impact of weed and pests as well as nutrient availability and losses in relation to reduction in the use of off-farm inputs and energy, cost effectiveness and environmental impact. Involving 7 partners of 4 CORE countries, project activities are organized in 6 work packages.

Aim, objectives and hypotheses

Following a multidisciplinary approach, the project will be simultaneously addressed to develop and evaluate the potential advantages and disadvantages of living mulch technique in terms of pest/beneficial interactions, weed and nutrient management and their effect on crop growth, yield, product quality, environmental impact and ecological services within the field.
The hypothesis of the research is that the introduction and the proper management of living mulch in vegetable production systems would allow comparable yields and produce higher quality in comparison to the sole cropping systems, reducing the use of external off-farm inputs (i.e. plant protections products and fertilizers) and not-renewable energy consumption (i.e. fossil fuel for mechanical weeding). The cover crops – vegetables cropping systems should then perform better in terms of environmental impact and profitability due to the reduction of production costs. The project will support vegetable producers in emancipating their systems from large use of external inputs with great benefit to profitability and environment.

Expected results and their impact/application

The main expected result is the development of cropping practices based on intercropping/living mulch tailored for each of the crop/system studied in the different countries. These ready-to-use cropping model will be then disseminated. Organic vegetable producers will benefit from the project outcome as it will supply knowledge on systems to produce organic vegetables with lower use of external inputs (fertilizers, plant protection products, water, energy etc.). It will result in improved farm profitability and more resilient farming systems that grants long-term productivity and produce quality. The organic sector will also benefit from the higher credibility to consumers of the intercropping production methods based on lower external inputs and higher biodiversity.
Rural communities will benefit from the project outcome in terms of improved environmental profile of organic vegetable farms and this will reduce the negative environmental impacts on soil and water. Furthermore, the increase of plant diversity in the field will benefit the biodiversity of natural fauna and microorganisms in the agro-ecosystems.
Consumers will benefit from the project as they will have the chance to choose, among organic production, vegetable with lower environmental impact. Policy makers and standard setters can use the project outcomes for feeding the standards improvement process (as for organic vegetable production EU Regulation is still simplistic) and for the definition of rural development plans and premium schemes.
Overall, the project will increase the body of knowledge about the effect of introduction of the intercropping/living mulch technique in organic vegetable productions on yield and produces quality, environmental impact and off-farm external energy and inputs use reduction for weeds, fertility and pests management. Accordingly, It is expected that the project outcomes will give a contribution in the debate about of the risk of the so called “conventionalization” of organic farming.

Coordinator, partners and countries involved

Institutions	**People**
Consiglio per la ricerca e la sperimentazione in agricoltura (2 Research Centers: RPS and ORA) - IT	Stefano Canali (Coordinator) Fabio Tittarelli Gabriele Campanelli Corrado Ciaccia
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